

**RTDF Permeable Reactive Barriers
Action Team Meeting
October 2003**



Mike Liberati - DuPont Corporate Remediation Group

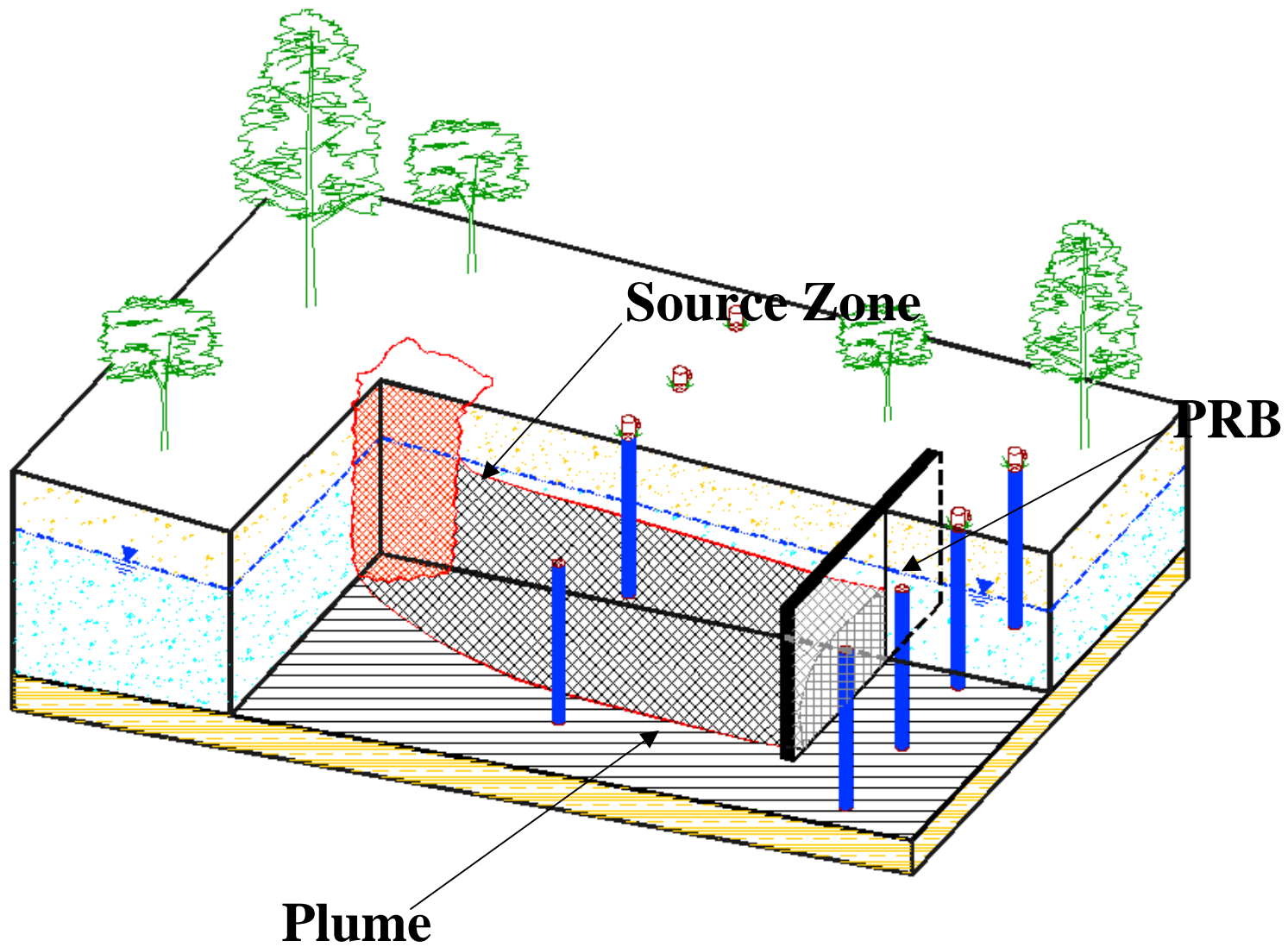
Use of ZVI and Clay for Source Zone Remediation

AKA
SATURATION BOMBING



Topics to be Covered

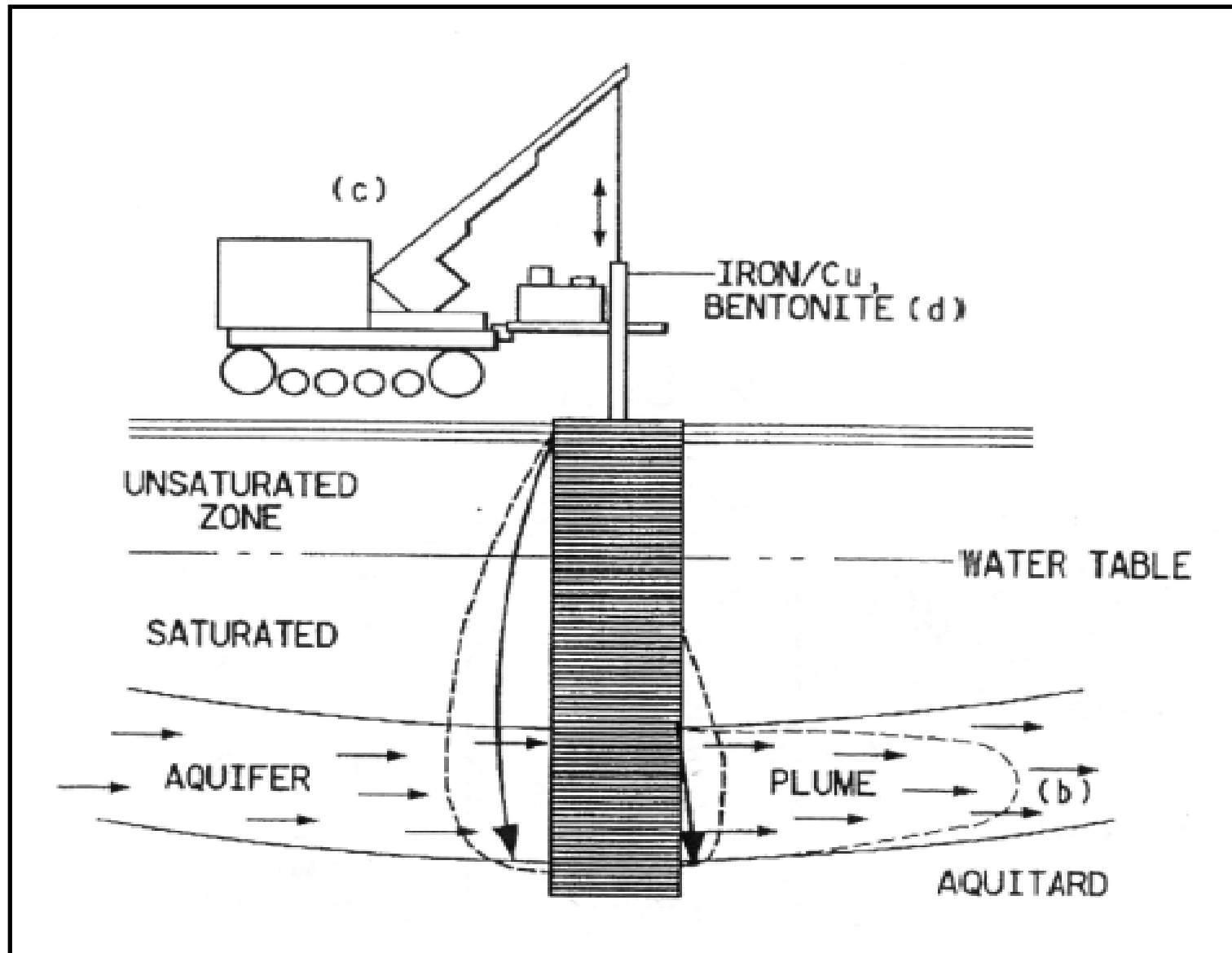
- Background on ZVI Source Treatment Technology
- Application at the DuPont Martinsville, VA site
 - Technology selection
 - Laboratory and Pilot Tests
 - Full-scale
 - Post Remediation Results



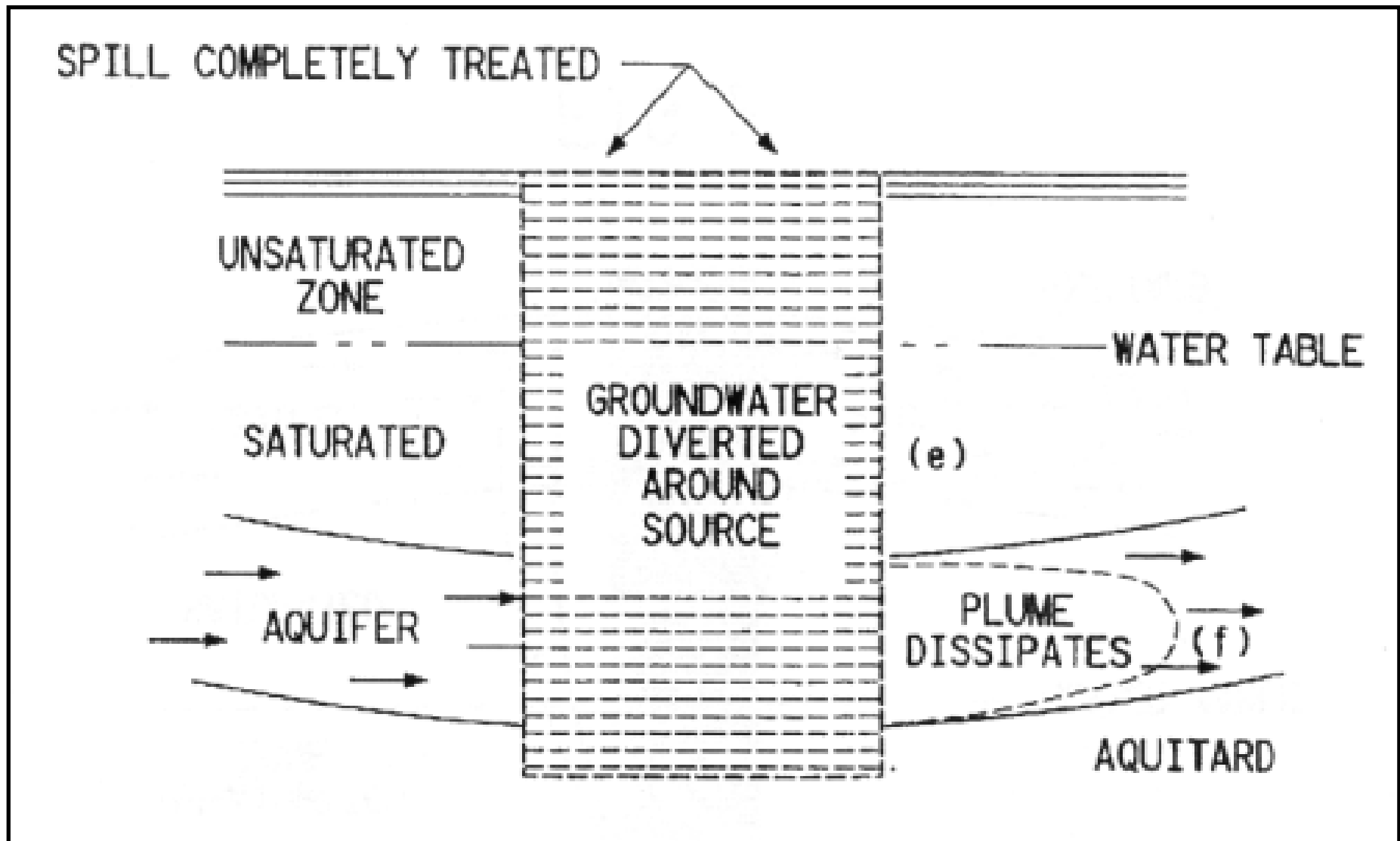
ZVI Source Treatment Technology

- DuPont Patented Technology
- Recently donated to Colorado State University
- Technology was developed to address contaminant destruction and control in the source zone
- Ultimate goal is to improve downgradient groundwater plume conditions

Zero Valent Iron Source Treatment



Zero Valent Iron Source Treatment



Deep Soil Mixing Augers



Courtesy of SWM Sieko



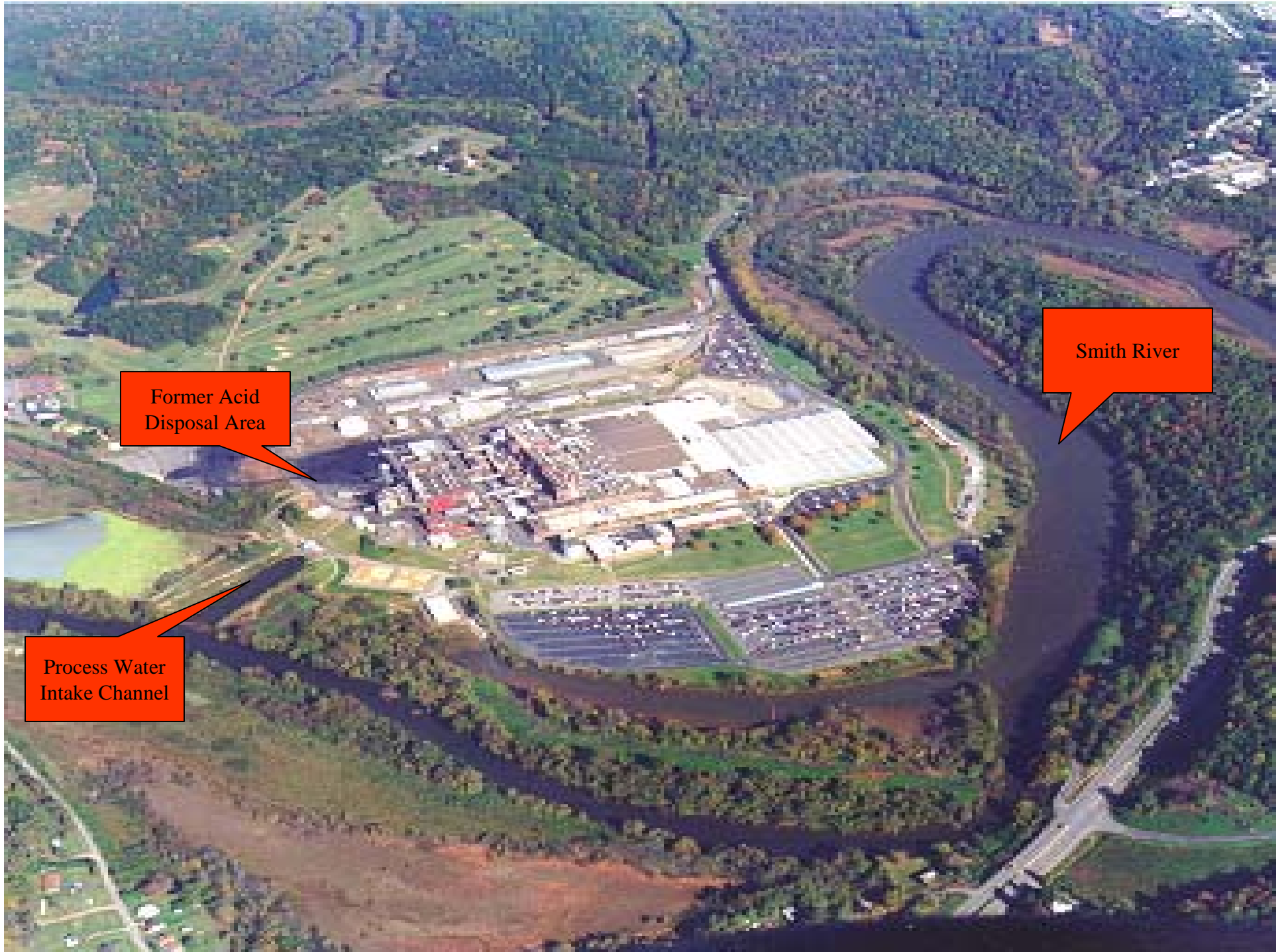


Source Control at the Former Acid Disposal Area



Site Location





Former Acid
Disposal Area

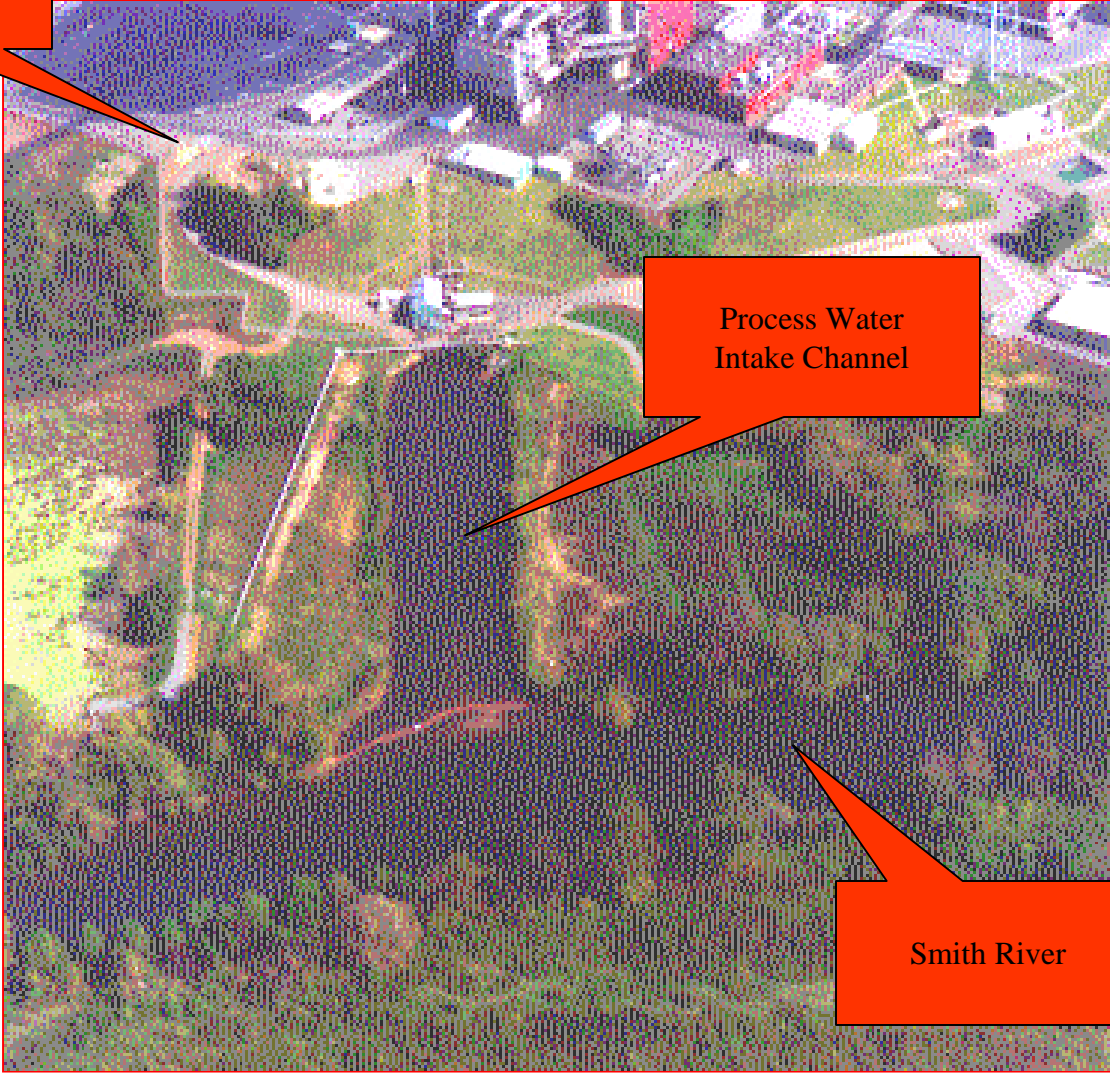
Process Water
Intake Channel

Smith River

Former Acid Disposal Area Description

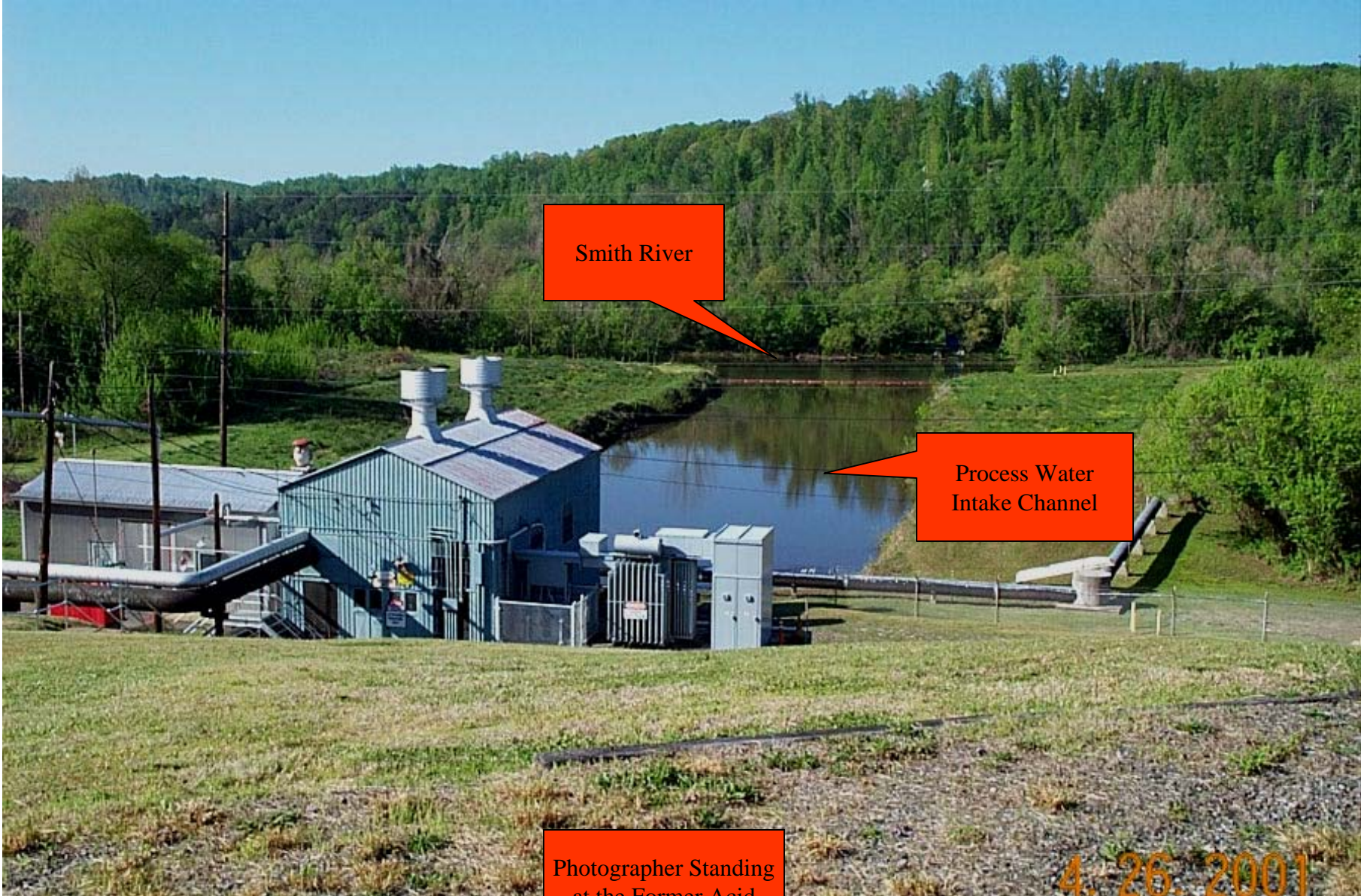
- Laboratory waste pits operated 1958-1974
- Two pits with concrete walls, open bottom, filled with limestone rocks
- Received various laboratory wastes, including spent nitric and formic acids, phenol, carbon tetrachloride (CT)
- Pits were closed by backfilling with soil

Former Acid
Disposal Area



Process Water
Intake Channel

Smith River



Smith River

Process Water Intake Channel

Photographer Standing at the Former Acid Disposal Area

4.26.2001

APR 71

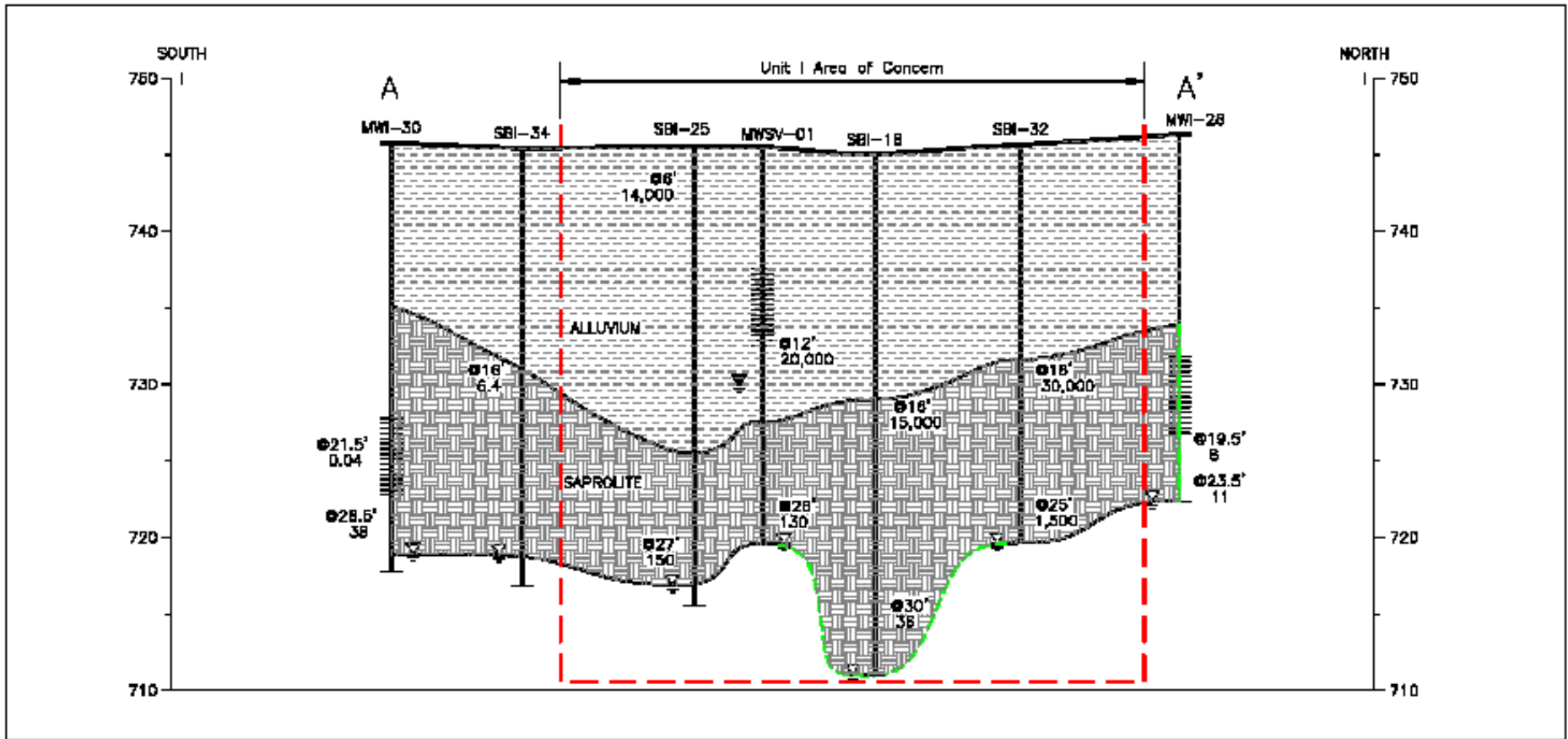


1971 Photograph of the Acid Disposal Area



Former Acid Disposal Area Investigation Findings

- Concentrations as high as 30,000 ppm CT in soil
- Approximately 8,000 cubic yards of impacted soil, very well delineated
- Approximately 20 tons of CT is in the vadose zone (0-25' bgs)
- Downgradient groundwater and surface water impacts



LEGEND	
▬	First Water Elevator
▬	Perched Water
▬	Estimated Boundary
▬	ALLUVIUM
▬	SAPROLITE
Concentrations in mg/kg	
NOTE: Concentrations denote Carbon Tetrachloride in Soil.	



TITLE: **Cross Section Unit I Soil (South-North)**
Unit I ISM Design - In Situ Iron Saturation
DuPont Martinville Plant

DATE: 11/08/2001	DRN: D.H. ENGLISH	DCOL:
DATE: 11/08/2001	DRN: T.E. CAMPBELL	DCOL:
DATE: 11/08/2001	DRN:	DCOL:

FILE NUMBER: FIG-3
FIGURE NO: 3

Groundwater and Surface Water Status

- Smith River is not a drinking water source
- Groundwater is not used for drinking water
- Site will continue to be used solely for industrial purposes
- Surface water CT concentrations are very localized
- Indications of an upward trend in surface water concentrations
- Indications that CT groundwater plume is not stable